

Research Note 83-1

IMPROVEMENT OF TRAINING REALISM FOR
TACTICAL UNITS: OPPOSING FORCE (OPFOR) PROGRAM

William L. Warnick and Albert L. Kubala
Human Resources Research Organization

ADA 121065

ARI FIELD UNIT AT FORT HOOD, TEXAS



U. S. Army

Research Institute for the Behavioral and Social Sciences

September 1982

Approved for public release; distribution unlimited.

DTIC FILE COPY

DTIC
SELECTED
S
APR 22 1983
A

83 04 21 125

IMPROVEMENT OF TRAINING REALISM FOR
TACTICAL UNITS: OPPOSING FORCE (OPFOR) PROGRAM

William L. Warnick and Albert L. Kubala
Human Resources Research Organization

Submitted by;
George M. Gividen, Chief
ARI FIELD UNIT AT FORT HOOD, TEXAS

Approved by:
Edgar M. Johnson, Director
SYSTEMS RESEARCH LABORATORY

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333

Office, Deputy Chief of Staff for Personnel
Department of the Army

September 1982

Army Project Number
2Q263739A793

Human Performance in
Field Assessment

Approved for public release; distribution unlimited.

FOREWORD

The Fort Hood Field Unit of the US Army Research Institute for the Behavioral and Social Sciences (ARI) conducts research in a variety of areas related to the needs of the Army in the field. This report addresses one such area, the development and operational field evaluation of Army training programs and concepts. This report deals specifically with the improvement of training realism.

A war using modern weapons systems is likely to be both intense and short. US man/weapons systems must be effective enough, immediately, to offset greater numbers of an enemy. Cost-effective procurement of improved or new combat systems requires research that includes analyses of the systems in operational settings similar to those in which the systems are intended to be used, with troops representative of those who would be using the systems in combat. The doctrine, tactics, and training packages associated with the systems being examined must themselves also be tested and refined as necessary.

This report presents the results of a research effort to develop more realistic approaches to deriving OPFOR-related training programs for tactical units. A systems engineering approach resulted in the development of a US/OPFOR training integration procedure which could be used to select and classify OPFOR information. From the tasks, OPFOR training objectives can be specified for use in training program development. The procedure was developed as a part of the total research effort and was used by FORSCOM's Opposing Force Training Detachment, Red Thrust, at Fort Hood, Texas.

ARI research in this area is conducted as an inhouse effort, and as joint efforts with organizations possessing unique capabilities for human factors research. The research described in this report was performed by personnel of the Human Resources Research Organization (HumRRO), under Contract No. MDA903-79-C-0191. This research is responsive to RDTE Project 2Q263739A793, "Human Performance in Field Assessment," FY 1980 Work Program.

IMPROVEMENT OF TRAINING REALISM FOR TACTICAL UNITS: OPPOSING FORCE (OPFOR) PROGRAM

BRIEF

Requirement:

AR 350-2, OPFOR Program, established the Army-wide Opposing Force (OPFOR) program. The purpose of the program is to focus training on the tactical capabilities and vulnerabilities of potential adversaries. The ultimate goal is to prepare US Army units to win outnumbered by familiarizing US soldiers with OPFOR doctrine, tactics, and weapons systems, and by providing them with an uncooperative, competitive and, whenever possible, numerically superior force against which to maneuver.

At present, the Army Training and Evaluation Programs (ARTEPs) guide the training and evaluation of US Army units. However, current ARTEPs contain no OPFOR-related training objectives. As a result, training managers and evaluation personnel have no behavioral criteria for judging troop and leader knowledge of and ability to counter an opposing force. This research was undertaken to develop procedures that could be employed by training managers Army-wide in developing OPFOR-related training objectives specific to the major missions of their units.

Procedure:

Original plans called for the development of specific OPFOR-related training objectives for selected tasks from a battalion ARTEP to serve as examples for training managers. However, on close examination of the ARTEP selected (ARTEP 71-2, Mechanized Infantry/Armor Task Force), it was found that the scenario lacked sufficient detail to specify the OPFOR-related tasks that had to be performed. The thrust of the effort was then changed. Work was initiated on the development of a set of general procedures for generating OPFOR-related training materials. The area of Nuclear, Biological, and Chemical (NBC) warfare was chosen as the vehicle for testing the applicability of the procedures. The procedures involved: (a) the development of a list of US Army tasks related to NBC warfare from all available sources, (b) the collection of OPFOR information on NBC warfare, and (c) the matching of OPFOR information to US tasks.

Principal Findings:

The procedures proved to be relatively successful. However, a number of problems were noted: (a) many of the US tasks on the lists obtained were stated in terms so general that the required behaviors could not be specified; (b) there was disagreement on what OPFOR-related information was "essential" to optimize performance on each of the tasks, and (c) many tasks that could be easily inferred from the OPFOR information as necessary for survival in an NBC environment were not on the task listings obtained. It was concluded that additional tasks and OPFOR information would have to be generated by other means for the development of a complete training package. Observation of simulated combat exercises in which a US force faced a well-trained force employing OPFOR doctrine and tactics appeared to be a plausible approach. This would permit the determination of what tasks were actually (or should have been) performed in the

battlefield environment, and how and what OPFOR-related information had a bearing on their performance.

Utilization of Findings:

The procedures developed appear to have sufficient generality to be applicable in the development of OPFOR-related training in a variety of content areas. The procedures have already been used in a seminar for training managers to aid them in designing OPFOR-related training for their own units. Future refinements should improve the procedures and increase their applicability.

CONTENTS

CHAPTER	PAGE
1 INTRODUCTION	1
2 PROBLEMS IN DEVELOPING AN APPROACH	4
3 A PERFORMANCE-ORIENTED APPROACH TO NBC TRAINING	7
Introduction	7
Structuring US/OPFOR Information on NBC	7
Development of the Procedures	8
Information About Soviets	9
Inferred Tasks	10
Matching Information to Tasks	10
4 ALTERNATIVE APPROACHES AND FUTURE PLANS	12
5 SUMMARY AND CONCLUSIONS	15
REFERENCES	17
APPENDIX: An Example of the Application of the Procedures for Integrating OPFOR Information Into US Task Training	19

Chapter 1

INTRODUCTION

The research described in this report is in response to a Human Resources Need (HRN) statement titled "Opposing Force (OPFOR) Training Objectives in ARTEPs." The HRN was submitted by FORSCOM's Opposing Force Training Detachment, Red Thrust, located at Fort Hood, Texas. This Detachment came into being as a result of Army Regulation 350-2, Opposing Force (OPFOR) Program, and is charged with the responsibility for collecting and disseminating OPFOR information, and advising units on the development of OPFOR training programs.

Both the ARTEP (Army Training and Evaluation Program) and OPFOR concepts are relatively new and have led to interrelated programs. The ARTEP is a program which provides guidance for the training and evaluation of all elements of a unit. The ARTEP is intended to enable the commander to evaluate his unit, develop training designed specifically to overcome deficiencies discovered, and then conduct a reevaluation. Each ARTEP lists the various major missions for each size unit. The missions describe the standards which the unit should train to achieve.

In effect, the Army has specified in *performance* terms the proficiency it desires and expects from its units. The tasks, the conditions under which the tasks are to be performed, and associated standards for training/evaluation are provided for each mission.¹

In concept, OPFOR is primarily a training program that focuses peacetime preparedness training on the tactical capabilities and vulnerabilities of our foremost political adversary, the Soviet Union. The OPFOR program is intended to train units to win, when outnumbered, by familiarizing US soldiers with Soviet doctrine, tactics, and weapons systems, and by providing them with an uncooperative, competitive and, whenever possible, a numerically superior force against which to maneuver.

The basic concept behind the OPFOR program is a sound one. US forces should be trained to do combat with potential opposing forces. However, implementation of the OPFOR program leaves much to be desired. Some units have been observed to have no OPFOR-related training program, while other units have employed widely differing approaches. One reason for this is that commanders have difficulty in trying to determine what OPFOR-related information is needed by their personnel. With the inception of the OPFOR training program in 1978, our military intelligence community made a concerted effort to declassify vast quantities of information and formulate it into working documents for commanders to use. As a result, a staggering amount of information has been, and is constantly being, generated concerning the Threat. For example, FM 30-102, Opposing Forces, Europe, dated 18 November 1977, contains a wealth of information. The USAARMS Threat Requirements Director's Office at Fort Knox, Kentucky, has developed

¹ ARTEPs and training. Armor Magazine, 1977, 86(5), 6-7.

a "User's Manual Extract Threat Data Classification Index." This index was designed to provide a central reference point for all personnel who needed Threat/OPFOR information at the Armor Center. The material received is broken down into major subject areas (e.g., tank and tank units, infantry and special units, combat support, helicopter, etc.). Vast quantities of information are also available from commercial sources. For example, The Warsaw Pact Armies² contains greatly detailed descriptions of weapons systems and Army organizations. The International Defense Review also frequently publishes material on Warsaw Pact nations.

Faced with this tremendous amount of information, it is difficult for training managers to know what parts of this information are essential for their personnel. For example, is it necessary for the US soldier to know the weight of a T-62 tank? Is it necessary for the US soldier to be able to fire the AK-49? Does the loader in a tank crew need the information on Soviet organizational charts? The answer to these questions is "probably not." It is difficult to see how these kinds of knowledges would affect the soldier's behavior. That is, it does not appear that such knowledges would change the way he does his job. Knowing the caliber of a tank's weapons and their effective ranges would be relevant to survival on the battlefield, but knowing the weight per se tells him nothing about its capabilities or how to engage it. Similarly, firing the AK-49 rifle is unlikely to change the way a soldier uses his own weapons.³ Knowing Soviet organization is probably useful to the intelligence specialist. However, the tank loader's concern is with what he sees and faces on the battlefield, not with the chain of command.

As mentioned before, the wealth of information available may be more confusing than helpful to the commander. It is not an easy task to sort through the data and determine what is required to optimize performance. That some such information can be useful has been well documented. For example, Olmstead, Elder, and Forsyth⁴ conducted a study of the ARTEP performance of battalion staffs in Europe. They observed that friendly units encountered considerable difficulty in the early stages of engagements when

²F. Weiner & W. J. Lewis. The Warsaw Pact Armies. Vienna: Carl Ueberreuter Publishers, 1977.

³It is very common in OPFOR training programs to have our soldiers handle and fire an AK-49. It is a fairly easy piece of Soviet equipment to appropriate. Presumably, the purpose of firing the weapon is to stimulate interest in Soviet equipment. Whether it does this is debatable. Also, the overall impact may be undesirable. The soldier will probably make a personal comparison between the AK and our own rifle. If the soldier prefers the AK to our rifle, he will lose confidence in our own weaponry. Not every soldier needs this type of training. However, specially trained units who habitually operate behind enemy lines may find it absolutely necessary for survival.

⁴J. A. Olmstead, B. L. Elder, & J. M. Forsyth. Organizational process and combat readiness: Feasibility of training organizational effectiveness staff officers to assess command group performance (Interim Report IR-ED-78-13). Alexandria, Virginia: Human Resources Research Organization. (Submitted to ARI, October 1978)

opposing force controllers played OPFOR doctrine and tactics realistically. In another study devoted to an analysis of the ARTEP performance of brigade command groups, Olmstead, Baranick, and Elder⁵ obtained similar results. This study showed that the effectiveness of command group performance was, at least in part, a function of the extent to which controllers employed realistic OPFOR doctrine and tactics. This research produced ARTEP-based learning objectives in the areas of doctrine, tactics, and weapons. However, these objectives were designed for command groups. Training objectives at the lower levels were not developed.

The commander of Red Thrust recognized the problems faced by other commanders in attempting to implement OPFOR training and integrate it into regular training. Current ARTEPs contain few, if any, OPFOR-related training objectives. Hence, Red Thrust felt that procedures needed to be developed to help commanders: (a) sort out what OPFOR-related information and skills their personnel needed, and (b) develop related training objectives to be integrated into ARTEPs. This would provide training managers and training evaluation personnel with specific criteria for measuring troop and leader knowledge of opposing forces. Recognition of these needs led Red Thrust's commander to request this research.

⁵J. A. Olmstead, M. J. Baranick, & B. L. Elder. Training for brigade command groups: Training objectives and strategies (Special Report No. 78-3). Alexandria, Virginia: Human Resources Research Organization.

Chapter 2

PROBLEMS IN DEVELOPING AN APPROACH

The plans for this research were formulated by the research staff in consultation with Red Thrust personnel. Initially, it was assumed that specific training objectives would be developed for a battalion-sized unit. However, final plans called for the research team to examine a battalion ARTEP, and:

- (a) Develop techniques and procedures for identifying those tasks that required OPFOR-related knowledges or skills for optimum performance.
- (b) Develop methods for locating and matching OPFOR information necessary for the performance of the tasks identified.
- (c) Write training objectives for selected tasks to serve as examples for other training program developers.

It was also planned that some prototype training materials would be developed to serve as models for other tasks, if time permitted. Red Thrust authorities hoped to use these materials to conduct workshops to train training managers, so that they might develop training objectives and training programs suited to their particular missions.

Red Thrust authorities also made it known that they were more interested in the development of training objectives for personnel at the squad and platoon levels than they were for personnel at the higher command levels.

The research team chose ARTEP 71-2, Mechanized Infantry/Armor Task Force (17 June 1977) as the vehicle for the research. However, a problem was soon encountered. On close examination, it was found that the OPFOR scenario provided lacked sufficient detail to permit the exact specification of the OPFOR-related tasks to be performed by US forces. This is due to no fault on the part of the ARTEP--its intent is to provide a reasonable battle scenario to be fleshed out by the chief evaluator and commander. Since ARTEPs must take into account various geographical locations world-wide, its directions must apply universally. However, this lack of specificity made the research team's task difficult. Specific problems noted were:

- (a) Details concerning the opposing force (e.g., equipment, tactics, force ratio) are not specified. As a result, the need for OPFOR-related information could not be specified. In fact, it has been noted that the opposing force typically is another US unit with US equipment employing US tactics.¹ This "Blue on Blue" exercise requires virtually no OPFOR knowledge on the part of the unit being evaluated. This problem was identified earlier by representatives of the Armor School (USAARMS):

¹N. D. Smith. State of the art: OPFOR and ARTEP implementation in the US Army (Research Problem Review 78-25). Alexandria, Virginia: US Army Research Institute for the Behavioral and Social Sciences, November 1978.

Threat portrayal is often not realistic, especially in the conduct of opposing forces ARTEP's. All training should be oriented on defeating the Threat, knowing his tactics and organization. This cannot be accomplished by using the divisional cavalry squadron (using U.S. organization and tactics) as the "Aggressor," or by allowing the opposing force battalion to polish its own tactics during the ARTEP.²

(b) The ARTEP covers only selected portions of a unit's total range of activities. The activities covered are primarily those leading to and including engagements. Not covered are a wider range of functions which must be accomplished for survival in a battle environment or when the unit is in a rear area preparing for its next mission. Things the unit is required to do to sustain itself are seldom, if ever, played (e.g., preparation for an air attack, a missile attack, or protection from nuclear fallout). Any or all of these might require knowledge of OPFOR tactics or weapons to maximize the likelihood of survival.

In brief, an examination of the ARTEP revealed that little or no specific OPFOR-related knowledges or skills were required for successful completion of the typical ARTEP. However, it is obvious that certain kinds of OPFOR-related knowledges and skills are required on the battlefield. For example, the ability to distinguish between friendly and threat weapons systems is of paramount importance. Other kinds of information were also found that appeared to be necessary, or at least very useful, but were not required in the ARTEP. Nevertheless, the research team felt that these knowledges and skills must be taught. A lack of such knowledges and skills would limit a unit's effectiveness and overall chances of survival. As a result, considerable effort was devoted to the development of a training program to meet a very obvious need--that of combat vehicle identification. Although this development was not included in the original objectives of this research, the need for such training was expressed many times to the Red Thrust briefing teams.

At this juncture, the research team, in consultation with Red Thrust authorities, decided to further modify the approach. The next step appeared to be to go beyond the ARTEP and determine what OPFOR-related knowledges and skills would improve overall performance in any aspect of the soldier's job. This decision resulted in an attempt to use job task inventories for selected infantry and armor jobs. Task listings were obtained from both the Infantry and Armor schools. The research literature was also examined in order to develop more complete task lists. Although the task lists were much more comprehensive than those that could be inferred from the ARTEPs, they dealt mainly with those aspects of a job (MOS) which were concerned with equipment and weapons. Except for those tasks dealing with target recognition and identification and weapons capabilities, few of the tasks appeared to require OPFOR-related knowledges and skills for their performance. This undoubtedly stems from the methods in which most task lists are derived. The problem was recognized earlier by McCluskey, et al. in their attempt to derive lists of knowledges and skills common to eight combat MOSs. They state:

²ARTEPs and training. Armor Magazine, 1977, 86(5), 6-7.

During the time frame of this particular project, job incumbents who were either participating in a representative conflict or had had recent relevant experience were not available. In the systems engineering of training materials, job incumbents are typically surveyed to identify the tasks they actually perform and then training materials are developed to increase proficiency in these job tasks. In the current project, however, the actual job tasks were not being performed. Even though a job incumbent may have held the duty position of a rifleman, he was not performing the normal functions of a rifleman in combat. Therefore, asking the job incumbent which tasks he actually performs does not provide a completely accurate picture.³

Therefore, it appears that the task lists will have to be expanded to take into account the tasks that a given job incumbent should be able to perform in combat, regardless of whether those tasks are presently performed. For instance, it was noted that the Soviets mark NBC contamination areas. These markers contain pockets where monitoring information (data) is placed for the benefit of Soviet troops passing through or near the contaminated areas. Obviously, it would be of benefit for US troops to be able to interpret these communications when they are found or pick up the information for forwarding to our intelligence agencies. However, so far as is known, nothing concerning this activity is included in our current task lists.

An attempt is currently underway to expand the task lists to include combat tasks which may have been omitted from the available lists due to the reasons cited above. Although it is suspected that many combat-related tasks requiring OPFOR information are missing from the current list, the original requirement for identifying tasks has been identified, procedures are needed for locating and matching OPFOR information to these tasks. A technique for accomplishing these ends was designed. Work on an example dealing with NBC warfare was started. A description of the method employed in developing the procedures using NBC warfare as the vehicle is presented in Chapter 3.

³M. R. McCluskey, T. O. Jacobs, & F. K. Cleary. Systems engineering of training for eight combat MOSs (Technical Report 74-12). Alexandria, Virginia: Human Resources Research Organization, June 1974.

Chapter 3

A PERFORMANCE-ORIENTED APPROACH TO NBC TRAINING

Introduction

The procedures were developed for Red Thrust for use in upcoming seminars to train Army training managers to develop OPFOR training programs for their units. Since these programs would involve many branches and MOSSs, the procedures had to be generalizable to each unit's needs.

The procedures were derived from the performance-oriented training model¹ and the systems approach to training, which the Human Resources Research Organization (HumRRO) has evolved in over 20 years of research and development.² The approach was designed specifically to relate OPFOR information to performance of tasks, and to incorporate that information in Functional Context Training (FCT).³ Employing the FCT approach, information is taught in the context of task performance, so that the learner sees its relevance. The material must either be required for task performance, or be needed to establish the relevance of the task being learned. For the present effort, this means that any OPFOR-related NBC information should help in task performance, and should be learned in the context of task training, rather than as a separate subject.

Structuring US/OPFOR Information on NBC

The NBC information obtained or inferred could be classified under three major headings (see example below). The Soviet information and the inferred US tasks were each subdivided into two categories.

¹US Department of the Army. Army Training Circular 21-5-2, Performance-oriented training, June 1974.

²M. P. Crawford. A new approach to training programs. Alexandria, Virginia: Human Resources Research Organization. (Reprinted from Science in Technical Education, American Association for the Advancement of Science, December 1968).

³H. A. Shoemaker. The functional context method of instruction. IRE Transactions on Education, 1960, E-3(2). (Also published as HumRRO Professional Paper 35-67), July 1967).

Example

Army Subject: US/OPFOR NBC Training

<u>US Individual Soldier's Task Inventory</u>	<u>Soviet Information</u>		<u>US Performance Inferred Tasks</u>	
	<u>Factual</u>	<u>Motivational/ Attitudinal</u>	<u>Individual</u>	<u>Unit</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Development of the Procedures

Soldier's task inventory. Red Thrust personnel suggested that an NBC task listing be developed because they thought the information important, and because it is represented in only a rudimentary way in US field exercises. Task lists were obtained from the Armor and Infantry schools and from other published sources.

From these, a total of 36 individual soldier tasks related to NBC warfare were extracted. However, many of the task statements presented problems. The descriptions were very broad and gave little or no inkling of the total range of individual activities that might have to be performed, or the knowledges and skills required for their performance. For example, some of the tasks related to protection against a nuclear attack were: (a) takes protective action against a nuclear attack; (b) protects food and personal equipment from NBC agents; (c) prepares a vehicle for nuclear attack; and (d) protects self while crossing a contaminated area. Such task statements are so broad as to be virtually meaningless to anyone not thoroughly familiar with their performance and the range of situations in which they might be performed.

Other task statements suggested a more limited set of activities such as: (a) identifies a chemical agent, using M-8 detector paper; or (b) reimpregnates clothing, using an M-13 kit. These tasks are highly procedural in nature and, therefore, the specific activities and related knowledges and skills are more easily defined. However, being procedural tasks virtually assures that they require no OPFOR-related knowledge for performance. The individual soldier will take the same care of his protective clothing and follow the same procedures in detecting chemical agents, regardless of whether the agents came from friendly or any possible hostile powers.

Other tasks fell into still a different category. For instance, the task "Recognizes the physical (physiological) effects of Soviet chemical agents" implies a mental rather than a physical performance. It further implies a certain amount of deduction, as symptoms may vary in both kind and degree even with the same agent, and agents must also be distinguished. However, assuming that there are chemical agents unique to the Soviet military, the requirement for OPFOR-related information is obvious.

Information About Soviets

The next step in the development of the procedures was to collect and collate all of the available information on OPFOR intentions, tactics and weapons in the area of NBC warfare. Only unclassified sources were consulted, as Red Thrust personnel wished to keep all of their training materials unclassified. From this material, a list of nonredundant Soviet items of information was compiled.

The list was submitted to Red Thrust personnel who provided military expertise in the NBC warfare area. They were asked to decide which items of information were essential for US forces to know. "Essential information" was defined as information that would either impact directly on job performance, or was required to place task learning in perspective. A large number of items was eliminated by this procedure. The Red Thrust personnel who participated in this exercise were surprised at the number of items they felt were "nice-to-know," but not essential.

Once the essential items were selected, Red Thrust personnel suggested that they be further classified into "factual" and "motivational/attitudinal" categories. This classification was felt to be needed as some items of information were considered to be essential to motivate learning, even though they had no direct effect on job behavior. The term "factual" was probably an unfortunate choice of a descriptor, although the items which were classified such were factual in nature. The term "job related," suggested later by a panel of psychologists, might have been a better choice. An example of information classified as factual is the fact that the Soviets have decontamination shower units. This is useful because US forces could improve their chances of survival if some of the units were captured. (Such "factual" information usually involves particular items of equipment or specific tactics.) Much of the factual information dealt with weapons and equipment characteristics and capabilities. Organizational structures and compositions often fell into this category. Items which are commonly called "givens"--things which are statements of fact--make up the type of information that was usually placed in the factual category. The second type of information could be called "motivational" or "attitudinal" because it involves mainly inferences about Soviet policy or intentions. This kind of information could be inferred only from more general considerations, such as statements of policy or numbers of forces. For instance, "Unlike the US, the Soviet Union has never discounted the possibility of using nuclear weapons in a first-strike capacity" may be purely propagandistic, intended to scare US forces. This item was considered essential because it gives both relevance and urgency to training in NBC warfare.

Several items of information were not easy to classify. Some facts were seen as having a potential for affecting both job performance and motivation. For example, the presumed fact that "Wear of Soviet NBC protective clothing is limited by heat buildup to roughly 15 minutes in hot weather (or two hours in cold weather)" could have both a purely psychological effect and a behavioral effect on US forces. Knowing the limitations of a potential adversary might encourage friendly forces who realize that there is a limit to their own endurance while wearing protective clothing. Also, knowing that the adversary must either withdraw or collapse after a short time, US forces might train to adjust their behavior and tactics in these situations accordingly. Consequently, there was considerable disagreement in cataloging the information into the two classifications. The final classification was based on the opinions of the majority. However, the classification is relatively unimportant from the standpoint of the trainer. Since the information was judged "essential," it must be included in training. The important thing that did happen was that the total amount of information in the subject area was reduced to a manageable size for training.

Inferred Tasks

Red Thrust personnel were asked to determine whether they could infer from the Soviet information any additional tasks beyond those located in the NBC task listings. A number of such tasks were derived. These were divided into individual and unit tasks. Two examples were "Recognizes and identifies contaminated area warning flags" and "Recognizes and identifies Warsaw Pact and Soviet radiological-chemical recon vehicles." These were inferred from two items of Soviet information: "Warsaw Pact countries employ specialized radiological-chemical recon vehicles. Some of them are the UAZ-69, BRDM-2, and FUG (OT-65). Some of their vehicles are equipped with warning flag emplacers"; and "Radiological-chemical crews can conduct surveys without dismounting from their vehicles. The vehicles are equipped with devices that can emplace warning flags with the crew mounted."

The derivation of additional tasks was felt to be necessary as items of Soviet information were identified which should impact or change individual or unit behavior on the battlefield. Without these tasks, the inventory of US tasks would not be complete.

Matching Information to Tasks

The final step in the development of the example was an attempt to match the items of Soviet information to US tasks where learning or performance of the tasks might be affected by the information. This was accomplished by eight psychologists from the HumRRO and ARI staffs at Fort Hood. Each psychologist was asked to use his best judgment in the matching. No limits were placed on the number of items that could be matched with any task. The results are shown in the appendix. Section 1 of the appendix contains the US tasks compiled from the task listings. Section 2 contains the Soviet information classified as factual, and Section 3 contains the Soviet information classified as motivational/attitudinal. Section 4 of the appendix contains individual soldier tasks that were inferred from the Soviet information. Section 5 contains unit tasks that were inferred from the Soviet information.

There was considerable variability among the classifications made by classifiers in both the number of tasks for which matches were made and the number of information items matched to tasks. Item/task matches shown in the appendix are those that were made by at least three of the eight participating psychologists.

Some observations were made by a sufficient number of psychologists to be worth reporting:

(a) The factual vs. motivational/attitudinal classification was judged to be somewhat irrelevant. Facts, just by being facts, can be directly job related, can influence motivation and attitude, can affect both, or can be totally irrelevant. It was suggested that better categories would have been "job related" and "motivational/attitudinal" (where "job related" would also include information not necessarily related to any specific job but which was needed to improve chances of survival).

(b) The task statements as a whole were (1) too vague, and (2) appeared to be written with training rather than combat in mind.⁴ For example, what does a soldier do after he "identifies contaminants." In training, perhaps he does nothing more. In combat, he must take some further contaminant-specific actions to protect himself, his equipment and fellow soldiers, if he is to survive. Otherwise, there would be no purpose in identifying contaminants. However, the tasks related to these further actions (e.g., protects self while crossing a contaminated area) are too broad to be meaningful. It was suggested that such tasks encompass a large number of subtasks, all of which should be specified to insure that the entire domain is covered. More than one psychologist suggested that the Soviet information should contain a list of likely contaminants. However, the list of contaminants was included in the original information, but was eliminated by the content experts.

(c) Several psychologists commented that much of the Soviet information could be employed to motivate trainees to learn almost any of the tasks, but need not be presented more than once. In other words, it was felt that a general section on Soviet tactics, capabilities, and presumed intentions should be presented, but probably as introductory material to the whole area of training in NBC warfare, rather than in the context of any specific task training.

While the procedures developed hold promise as a technique for selecting OPFOR information for training and determining how the information should be integrated into task training, it obviously needs some refinement. The major problem encountered in applying the procedures was the great differences of opinion concerning both the selection of essential information and the specification of the best place to integrate the information in training. This kind of problem might have been alleviated somewhat had the task statements been less broad. If detailed subtask statements and all related training objectives had been available, the job probably would have been more tedious, though easier, and better agreement would have resulted. In any future attempts to apply the procedures, subtask statements and associated training objectives will be sought, and made available to all personnel involved in developing the OPFOR-related training materials.

Application of this procedure should provide the trainer with information on exactly where in training the judged essential OPFOR information should be integrated. Each task in the task listings is taught at some specific point during training. The training manager only has to ensure that OPFOR-related information judged essential for a particular task is integrated into the Program of Instruction (POI) for that task.

Naturally, not all US tasks require OPFOR information for their successful performance. In such cases, no changes in training of the US tasks need be made. The purpose of this matching was simply to find out what US tasks did require OPFOR information for optimum performance.

⁴Chapter 2 includes a discussion of the problems involved in deriving combat-related tasks.

Chapter 4

ALTERNATIVE APPROACHES AND FUTURE PLANS

Even though the NBC training example described in Chapter 3 may have shortcomings, the requirement for OPFOR-related objectives is still valid. The National Training Center (NTC) at Fort Irwin, California, is expected soon to become an operational reality. The NTC is to have a dedicated OPFOR unit to provide more realistic training for US forces. The unit will not only employ OPFOR tactics, but is expected to have actual and/or simulated OPFOR equipment. Therefore, US units preparing for an evaluation at Fort Irwin will need OPFOR-related training objectives for ARTEPs.

To meet that need, the research team staff began to look for alternative approaches for development of such training objectives. Ideally, the objectives should be derived from practical experiences of individuals who have actually engaged an opposing force, but US forces have no such experience. However, some of our forces have conducted Field Training Exercises (FTXs) based on ARTEPs against highly trained units employing OPFOR doctrine and tactics. These types of FTXs are not employed regularly in ARTEPs, for reasons cited by Smith in a publication prepared earlier in this project. He noted two major problems in integrating OPFOR concepts into ARTEPs. First, realistic OPFOR units were unavailable for maneuvers. Commanders almost universally complain that they have too little time and too few resources for training. Dedicating a group to serve as an OPFOR unit would further strain resources and take time away from regular training activities.

The second reason is that commanders do not want to risk bad evaluations and that may well be more important. Smith noted that:

...it is the firmly entrenched belief that the ARTEP is not just an evaluation/training program, but a test of the battalion and its commander, the outcome of which may weight heavily on the officer's efficiency report and on his future as an officer.¹

Consequently, commanders do not wish to face anything unfamiliar in the ARTEP. They strongly resist employment of realistic OPFOR tactics. For instance, an OPFOR trained unit, originally employed in exercises at Fort Irwin, was later available at Fort Hood. There the group participated in 22 exercises and ARTEPs, but only twice were they permitted to maneuver as an OPFOR unit. In discussions, members of the OPFOR group said the participating units feared a poor evaluation. The OPFOR group's potential usefulness was negated "...because brigade and battalion commanders did not want their units to be faced with the results of a confrontation against OPFOR tactics and OPFOR organization...namely defeat."²

¹N. D. Smith. State of the art: OPFOR and ARTEP implementation in the US Army (Research Problem Review 78-25). Alexandria, Virginia: US Army Research Institute for the Behavioral and Social Sciences, November 1978.

²Ibid.

While the OPFOR-trained unit was not used to best advantage, reportedly much was learned by the 19 platoons from the 194th Armor Brigade who engaged this force. Smith quotes the commander of the OPFOR unit from his after action report:

The individual soldier had learned to associate the sight of the approaching OPFOR company with five distinct experiences: fast offensive action, large numbers of vehicles, extensive electronic warfare (jamming) activities, heavy employment of smoke, and finally an almost certain employment of chemical agents.³

The OPFOR commander went on to say:

Platoons had learned to cope with massive odds, understand the type of tactics that would be employed against them and were able to fight a piece of ground effectively without radio communications and under heavy CBR concentrations.⁴

In writing about the same series of exercises, Raymond⁵ also discussed lessons learned by US forces. He states that the most prominent weakness observed was that "most platoons remained in positions too long--sacrificing the mobility needed to continue the active defense." For the individual soldiers, Raymond cites the following lessons learned:

- Use time to its maximum advantage.
- Dig in and camouflage properly.
- Know the enemy's tactics and capabilities.
- Make every round count, shoot to kill, and at long ranges.
- Know your equipment; operate it in smoke, gas, and under other extreme conditions.
- Never fire more than twice from the same position.
- When moving, move fast, with decision, and stay covered and concealed.
- When the enemy closes to within 1,500 meters of your position you had better begin to move.
- Learn to use and work with your brothers in the infantry, artillery, and engineers.
- Think, develop plans, and organize.

³Ibid.

⁴Ibid.

⁵G. E. Raymond. Red Thrust. Armor Magazine, 1979, 88(5), 18-19.

Apparently much was learned through these exercises, and such exercises are often an effective way to learn it. The team plans to develop OPFOR-related training objectives based on these and similar exercises. However, the material should be made more specific and detailed, even to serve as a starting point. For example, consider Raymond's first lesson: "Use time to its maximum advantage." If the troops did learn to use time to better advantage, what did they do differently? Did they simply work faster? Did they change the order of activities to insure that the most critical activities were accomplished first? Did they organize cooperative ventures to insure maximum efficiency in all activities? Answers to questions such as these must be found before training objectives can be derived. Training objectives must be designed to teach optimum behaviors, but the specific behaviors must first be known.

The research team hopes to obtain more detailed information on the learning experiences of the personnel involved in the exercises at Fort Irwin. Fortunately, a number of the participants are still with the 194th Armor Brigade at Fort Knox. Preliminary arrangements for interviews and discussions with these personnel have been coordinated with the Brigade. Future plans also include interviews with elements of the Marine Corps who will participate in a field maneuver against an exceptionally well-trained OPFOR group during CY 1980.

Job task lists will be used in conjunction with ARTEPs (FTXs) in the development of a comprehensive OPFOR-related task inventory and associated training objectives. The integration procedures that the research team formulated can be used by military training managers in developing OPFOR-related training on the specific tasks for their units.

Chapter 5

SUMMARY AND CONCLUSIONS

AR 350-2, OPFOR Program, established the Army-wide Opposing Force training program. The purpose of the program is to focus US force training on the capabilities and vulnerabilities of the armed forces of potential adversaries. To accomplish this, training managers need OPFOR-related training objectives. However, procedures for deriving these objectives are not currently available. Furthermore, the volume of information available on the armed forces of potential threat nations is voluminous, making it difficult to locate and abstract that information needed for optimizing performance for specific types of missions. Recognition of these problems led the Red Thrust Detachment at Fort Hood, Texas, to establish a requirement for the development of techniques for integrating relevant OPFOR-related information into Army Training and Evaluation Programs (ARTEPs).

The research team initially planned to develop procedures for identifying ARTEP tasks requiring OPFOR-related knowledges or skills for optimal performance, and to develop methods for locating and matching OPFOR information to those tasks. However, it was found that the language of the ARTEP was too general to permit the exact specification of OPFOR-related tasks. For example, opposing force equipment requirements, tactics, and force ratios are not spelled out. As a result, the research approach was modified. The revised approach involved the development of generalizable procedures for determining what OPFOR-related knowledges and skills were required for all aspects of the soldier's job. The procedures were derived from the performance-oriented training model¹ and the systems approach to training. Essentially, the approach involved obtaining complete task listings for an MOS and then determining what OPFOR-related knowledges and skills (if any) were required for the performance of each task. The area of Nuclear, Biological and Chemical (NBC) warfare was chosen to test the procedures. The steps followed were:

- (a) Task listings for selected MOSs were obtained from both the Armor and Infantry schools. These were supplemented by reference to the research literature.
- (b) Information on NBC warfare practices of Warsaw Pact nations was extracted from all sources available.
- (c) Personnel from the Red Thrust Detachment were asked to select those items of OPFOR information on NBC warfare they felt to be essential for US forces to know. They also classified items as being either "factual" or "motivational/attitudinal." The motivational/attitudinal classification was suggested by Red Thrust personnel as they felt that some items of information were essential to develop attitudes or motivate learning even though they would have no direct effect on job behavior.
- (d) Red Thrust personnel were asked to infer any additional US tasks that were not included in the task listings from the essential information.

¹US Department of the Army. Army Training Circular 21-5-2, Performance-oriented training, June 1974.

(e) A group of eight psychologists were asked to match the OPFOR information to the task or tasks where knowledge of the information might affect task performance.

While the procedures developed hold promise as a technique for selecting OPFOR information for training and determining where the information should be integrated into task training, the approach obviously needs some refinement. The more significant findings were:

(a) Most task statements in current lists were too broad in scope, too vague, or appeared to be written with training rather than combat in mind, making it difficult to specify exactly what OPFOR-related knowledges and skills were required.

(b) Current task listings covered only a portion of the soldier's total job with respect to NBC warfare. New tasks, not found in the listings, could be inferred from the OPFOR information available.

(c) There were a number of differences of opinion concerning both the selection of essential information items and the specification of the best place to integrate the information into training.

Although the procedures can undoubtedly be improved, it appears that other means of deriving information for training purposes are needed. It is suggested that an excellent source of data would be observation (followed by personnel interviews) of exercises in which US forces face a well-trained OPFOR employing realistic Soviet tactics. The lessons learned, especially from US force failures, should prove most valuable in determining what our personnel should know about the OPFOR.

REFERENCES

ARTEPs and training. Armor Magazine, 1977, 86(5), 6-7.

Crawford, M. P. A new approach to training programs. Alexandria, Virginia: Human Resources Research Organization. (Reprinted from Science in Technical Education, American Association for the Advance of Science, December 1968).

McCluskey, M. R., Jacobs, T. O., & Cleary, F. K. Systems engineering of training for eight combat MOSSs (Technical Report 74-12). Alexandria, Virginia: Human Resources Research Organization, June 1974.

Olmstead, J. A., Baranick, M. J., & Elder, B. L. Training for brigade command groups: Training objectives and strategies (Special Report No. 78-3). Alexandria, Virginia: Human Resources Research Organization. (Submitted to ARI, February 1978).

Olmstead, J. A., Elder, B. L., & Forsyth, J. M. Organizational process and combat readiness: Feasibility of training organizational effectiveness staff officers to assess command group performance (Interim Report IR-ED-78-13). Alexandria, Virginia: Human Resources Research Organization. (Submitted to ARI, October 1978.)

Raymond, G. E., Jr. Red Thrust. Armor Magazine, 1979, 88(5), 18-19.

Shoemaker, H. A. The functional context method of instruction. IRE Transactions on Education, 1960, E-2(2). (Also published as HumRRO Professional Paper 35-67, July 1967.)

Smith, N. D. State of the art: OPFOR and ARTEP implementation in the US Army (Research Problem Review 78-25). Alexandria, Virginia: US Army Research Institute for the Behavioral and Social Sciences, November 1978.

US Department of the Army. Army Training Circular 21-5-2. Performance-oriented training, June 1974.

Wiener, F., & Lewis, W. J. The Warsaw Pact armies. Vienna: Carl Ueberreuter Publishers, 1977.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX

**AN EXAMPLE OF THE APPLICATION OF THE PROCEDURES FOR
INTEGRATING OPFOR INFORMATION INTO US TASK TRAINING**

THIS PAGE INTENTIONALLY LEFT BLANK

ITEM NUMBERING, ALL SECTIONS

The first digit always refers to the section. In Section 1 the next two digits only refer to the order in which the task is listed (e.g., Task 1.13 is the 13th task in Section 1). In Sections 2 and 3 the second and third digits refer to the US task with which the information was matched. For example, an item numbered 2.14 would be an item classified by Red Thrust as factual and matched with US Task 14 by the panel of psychologists. Items numbered "00" in the second and third digits were not matched to any US tasks.

Section 1

US INDIVIDUAL SOLDIER'S TASK INVENTORY

- 1.01 Puts on and wears protective clothing in an NBC environment (Mission-Oriented Protective Posture [MOPP]).
- 1.02 Recognizes the physical (physiological) effects of Soviet chemical agents.
- 1.03 Recognizes the physical (physiological) effects of Soviet biological agents.
- 1.04 Recognizes the physical (physiological) effects of nuclear radiation.
- 1.05 Determines that an NBC attack is underway.
- 1.06 Identifies Soviet NBC agents.
- 1.07 Gives the correct visual, vocal, or sound alarm for NBC attacks (to include the standard NATO signal for an NBC attack).
- 1.08 Recognizes the conditions for masking and unmasking.
- 1.09 Puts on and wears protective mask:
 - (a) M17 series
 - (b) M24, M25, or M25A1 series
- 1.10 Supervises the fitting of protective masks.
- 1.11 Inspects for correctness of wearing the protective mask and clothing of others.
- 1.12 Maintains protective mask and clothing.
- 1.13 Protects leather footwear and gloves, using the M-2 vesicant leather dressing.

- 1.14 Performs first-aid for blister agent casualty, using the M-258 and M-13 decontamination kits.
- 1.15 Performs first-aid for nerve gas casualty, using the M-258 kit for affected skin areas, atropine injector for symptoms.
- 1.16 Performs first-aid for blood agents casualty (amyl nitrate ampules).
- 1.17 Performs mask-to-mouth resuscitation.
- 1.18 Takes protective actions against an NBC attack.
- 1.19 Protects food and personal equipment from NBC agents.
- 1.20 Prepares a vehicle for nuclear attack.
- 1.21 Protects self while crossing a contaminated area.
- 1.22 Applies personal survival techniques in a chemical environment.
- 1.23 Identifies contaminants.
- 1.24 Tests for chemical agents, using a chemical agent detector kit.
- 1.25 Identifies a chemical agent, using M-8 detector paper.
- 1.26 Performs individual decontamination, using the M-258 and M-13 kits.
- 1.27 Decontaminates unit vehicles, using the M-11 decontamination sprayer (with D5-2 Super Tropical Bleach [STB]).
- 1.28 Decontaminates individual equipment.
- 1.29 Marks areas contaminated by NBC agents.
- 1.30 Makes an NBC-1 Observer's Report and understands that it has flash precedence.
- 1.31 Employs chemical munitions.
- 1.32 Maintains chemical munitions.
- 1.33 Initiates unmasking procedures.
- 1.34 Maintains protective clothing.
- 1.35 Reimpregnates clothing, using M-13 it.
- 1.36 Stores protective mask with hood in its proper place.

Section 2

SOVIET INFORMATION: FACTUAL

2.01 The Soviet Army trains exclusively while wearing full protective equipment.

2.34

2.09 The standard Soviet protective mask is a helmet-type that completely covers the head. The eyepieces have air deflected over them to prevent exhaled air from contacting the eyepieces. The mask is heavy and uncomfortable, especially in hot weather. The mask has low visual efficiency and the breathing resistance is fairly high. It is awkward to put on and wear the mask due to the design of its breathing hose and cannister.

2.14 Medical treatment kits are provided for all Soviet personnel. They are always available in unit stocks. The kits provide adequate treatment for the effects of toxic chemical agents and enables them to treat themselves for minor wounds.

2.15

2.16

2.18 Smoke can reduce casualties from thermal radiation during a nuclear blast.

2.26 Each soldier has an individual decontamination kit. Some form of portable decontamination apparatus is provided for each vehicle and crew-served weapon. Decontamination units have specialized vehicular decon equipment used for large-scale decontamination. Training in decon is conducted and stressed at all levels of command.

2.26 Decontamination shower units are used for personnel. Very usable, if ever captured.

2.27 The Soviet Army has decon equipment that operates like a carwash. Two decon units are positioned side-by-side and the column of vehicles is driven between them. Decon time varies from 0.5 to 3.0 minutes per vehicle, depending on the type and amount of contamination.

2.00 The Soviets use rubberized fabric in their protective gear. Combat personnel are issued lightweight protective clothing.

2.00 Small, effective, and relatively simple detection kits are used by chemical personnel. Pocket-sized units are for squad-level, NBC personnel. Automatic alarm systems for the detection of nerve gas are standard equipment for NBC recon units.

2.00 Warsaw Pact countries employ specialized radiological-chemical recon vehicles. Some of the them are the UAZ-69, BRDM, BRDM-2, and FUG (OT-65). Some of their vehicles are equipped with warning flag emplacers.

Section 3

SOVIET INFORMATION: MOTIVATIONAL/ATTITUDINAL

3.01 The combined arms protective suit can be used as a raincoat, ground cloth, field shelter, flotation bag, and a means for transporting wounded. It is not airtight, and impregnated undergarments must be worn for complete protection against field concentrations of toxic chemical agents.

3.02 Soviet forces are the best equipped army to wage chemical warfare.

3.02 The Soviet Army can employ chemical mines.

3.02 Chemical weapons are considered to be routinely available to commanders.

3.05

3.31

3.32

3.05 The Soviet Union is the only country in the world whose leadership counts on a "victory" in a nuclear war.

3.05 Unlike the US, the Soviet Union has never discounted the possibility of using nuclear weapons in a first-strike capacity.

3.05 The Soviets will employ together both conventional and nuclear weapons. Even chemical weapons will be mixed in to achieve maximum casualties.

The Soviets only have one mask which has special provisions for installing optically-corrective lenses. It is a helmet mask and incorporates a voice-mitter. It has small eyepieces that are located directly in front of the wearer's eyes, making it easier to use optical devices such as binoculars and optical sights. Visual efficiency with this mask is extremely low.

3.05 The Soviets do not advocate withdrawing their troops in contact for close support nuclear strikes.

3.05 One of their basic tactical protective measures against mass destruction weapons is to maintain continuous contact with the enemy (hugging).

3.05 The Soviet Army allows higher radiation doses than those permitted by the US Army. In extreme situations, even lethal doses may be permitted.

3.05 In mobile situations such as meeting engagements, exploitation, and pursuit, the Soviets keep some of their nuclear weapons systems in a high state of readiness to fire on targets of opportunity.

3.08 Smoke is habitually used in all types of operations. The Soviets proclaim that "exposure to smoke produces a depressive psychological effect on personnel and forces them to take protective measures against the possible toxic effects."

3.29 Radiological-chemical recon crews can conduct surveys without dismounting from their vehicles. The vehicles are equipped with devices that can emplace warning flags with the crew mounted.

3.00 The Soviets also used cooling-type coveralls. These are worn over impermeable outfits to increase comfort and allow longer working periods. For cooling, the coveralls are soaked with water. Heat is removed from the impermeable suits by the cooling effects of the evaporative process. Its cooling efficiency varies with the air temperature and humidity. The coveralls are not used at temperatures below 15°C (59°F).

3.00 The wearing time of Soviet protective clothing is limited by heat buildup and varies from 2 hours in cold weather to 15 minutes in hot weather, unless cooling-type coveralls are also worn.

3.00 The Soviets believe that combat in a nuclear environment will not necessarily be short-term. They, therefore, consider a large standing armed force, along with a vast mobilization potential, to be essential in order to make more acceptable high manpower losses while retaining the capability to sustain offensive operations and carry out other missions outside the immediate combat area.

3.00 Soviet doctrine stresses the priority of the destruction of enemy combat units, over the acquisition of terrain.

3.00 The Soviets have a mask which is designed for personnel whose head or facial wounds prevent wearing the standard combat mask. The air passages have been modified to make them less susceptible to clogging by vomit and body fluids. Breathing resistance is lessened by using two cannisters. Oxygen can also be supplied through the mask. The mask offers good protection, if injuries and medical dressings do not permit a good neck seal.

3.00 A breathing device much like a rebreather unit in scuba diving is used by chemical recon and combat engineer personnel. It generates its own oxygen and can be used underwater. It can only be used for one hour. The unpleasant odor of the regenerated air causes some users to be nauseated. Visual efficiency is low. A newer model can be used for a two hour period. This newer model is used by tank crews to escape from submerged tanks during snorkeling operations.

3.00 Decontamination in Soviet units is carried out only if it does not degrade the mission.

Section 4

US INFERRRED TASKS: INDIVIDUAL

- 4.05 Performs immediate action drill.
- 4.06 Maintains job performance with minimal loss of job efficiency and without removing the mask for a minimum of four hours.
- 4.27 Recognizes and identifies Warsaw Pact and Soviet radiological-chemical recon vehicles.
- 4.29 Recognizes, identifies, and interprets contaminated area warning flags.
- 4.29 Recognizes, identifies, and interprets contaminated area markers and signs.

Section 5

US INFERRED TASKS: UNIT

- 5.01 Applies Mission-Oriented Posture (MOPP).
- 5.02 Performs unit immediate action drill.
- 5.03 Recognizes the tactics of "hugging" and takes appropriate actions. (Hugging should be stressed by the OPFOR during ARTEPs. This could also be an individual task.)
- 5.04 Decontaminates equipment and personnel. (Each unit should have a trained decontamination team.)
- 5.05 Segregates, decontaminates, and isolates chemical casualties.
- 5.06 Accomplishes all unit mission under chemical conditions.
- 5.07 Accomplishes unit missions under smoke conditions.